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number each 4 men more, the whole body will then contain 2320 men. How many men in the militia?

**I. Solution by Professor G. B. M. ZERR, Principal of Schools, Staunton, Virginia.**

Let  $ABCD$  represent the body of militia.

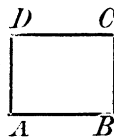
Then  $AB:CB=3:2 \therefore 2AB=3CB, AB=\frac{3}{2}CB$

Now  $(CB+4)(\frac{3}{2}CB+4)=2320.$

$\therefore CB^2+\frac{3}{2}CB=1536.$

$CB=36, AB-\frac{3}{2}CB=54.$

The required number =  $36 \times 54 = 1944$  men.



**II. Solution by P. S. BERG, Apple Creek, Ohio.**

1. If 16 men be taken from 2320 men the remainder, 2304 men, may be regarded as standing on 6 squares + 5 rectangles each 4 wide and just as long as each of the six squares.

2.  $\therefore$  1 square + 1 rectangle  $\frac{1}{3}$  wide =  $2304 \div 6 = 384.$

3.  $\therefore$  1 square + 2 rectangles  $\frac{2}{3}$  wide = 384.

4.  $\therefore$  Completed square =  $384 + \frac{2}{3} \times 384 = 386 \frac{2}{3}.$

5.  $\therefore$  Side of complete square =  $19 \frac{2}{3}.$

6.  $\therefore$  Side of original square =  $19 \frac{2}{3} - 1 \frac{2}{3} = 18.$

7.  $\therefore$  Side rank =  $18 \times 2 = 36$  men.

8.  $\therefore$  Front rank =  $18 \times 3 = 54$  men.

9.  $\therefore$  Total number of men =  $54 \times 36 = 1944.$

Solved in a similar manner by J. A. Calderhead, H. C. Whitaker, and I. L. Beverage.

A. L. Foote gave an excellent solution by Algebra.

## PROBLEMS.

**18. Proposed by L. B. HAYWARD, Superintendent of Schools, Bingham, Ohio.**

In a circle whose radius is 6, find the area of the part between parallel chords whose lengths are 8 and 10, both being on the same side of the center.

**17. Proposed by H. W. HOLYCROSS, Superintendent of Schools, Pottersburg, Union County, Ohio.**

A gentleman owns a circular farm, and if three circles of equal area and as large as possible be drawn within it, the circular area in the center of the farm will contain one acre; what is the area of the circular farm?

**16. Proposed by EARL D. WEST, West Middleburg, Logan County, Ohio.**

How many stakes can be driven down upon a space 15 feet square allowing no two to be nearer each other than  $1\frac{1}{2}$  feet, and how many allowing no two to be nearer than  $1\frac{1}{4}$  feet?

**15. Proposed by O. S. KIBLER, Superintendent of Schools, West Middleburg, Logan County, Ohio.**

Supposing the town A to be 30 mi. from B, B 25 mi. from C, C 20 mi. from A, where must a house be erected to be equally distant from each of the towns?

**14. Proposed by Professor G. B. M. ZERR, A. M., Principal of Schools, Staunton, Virginia.**

A bank by discounting a note of 7% receives for its money a discount equivalent to  $7\frac{3}{4}\%$  interest. How long must the note have been discounted before it was due?

Solutions to these problems should be received on or before May 1st.